

## REMARKS

The present amendment makes editorial changes and corrects typographical errors in the specification, which includes the Abstract, in order to conform the specification to the requirements of United States Patent Practice. No new matter is added thereby. Attached hereto is a Substitute Specification including a marked-up version of the changes made thereto via by the present amendment.

In addition, the present amendment cancels original claims 1-6 in favor of new claims 7-12. Claims 7-12 have been presented solely because the revisions by red-lining and underlining which would have been necessary in claims 1-6 in order to present those claims in accordance with preferred United States Patent Practice would have been too extensive, and thus would have been too burdensome. The present amendment is intended for clarification purposes only and not for substantial reasons related to patentability pursuant to 35 U.S.C. §§101, 102, 103 or 112. Indeed, the cancellation of claims 1-6 does not constitute an intent on the part of the Applicants to surrender any of the subject matter of claims 1-6.

Early consideration on the merits is respectfully requested.

Respectfully submitted,

BELL, BOYD & LLOYD LLC

BY 

Peter Zura  
Reg. No. 48,196  
P.O. Box 1135  
Chicago, Illinois 0690-1135  
Phone: (312) 807-4208

Dated: June 10, 2005

**Marked-Up Version of Substitute Specification**

**Description**

~~Slider mobile telephone comprising a bending wave loudspeaker~~

SPECIFICATION

TITLE OF THE INVENTION

SLIDER MOBILE TELEPHONE COMPRISING A BENDING WAVE

LOUDSPEAKER

FIELD OF THE INVENTION

The ~~invention~~ present disclosure relates to a mobile telephone which comprises a first and a second housing part which can be displaced with respect to one another in such a way that sections of the housing parts are exposed as a result of the displacement.

BACKGROUND

~~This type of~~ Such mobile telephone-telephones mentioned above are is generally referred to as ~~what~~ is known as a "slider" mobile telephone, wherein the first and the second housing part can be displaced with respect to one another in the longitudinal direction of the mobile telephone. During this displacement, a keypad is exposed which allows a user of the mobile telephone to operate it. The keypad is usually located on the housing part of the mobile telephone which is at the rear in relation to the user. The front housing part of the mobile telephone has a fixed rear wall which has no function other than that of mechanically protecting the interior of the front housing part.

~~Furthermore, the prior art has recently disclosed mobile telephones which are~~ Mobile phones known in the art may also be equipped with a bending wave loudspeaker. In this case, a protective window over a display device of the mobile telephone, for example, is designed as a bending wave loudspeaker and is excited to produce bending vibrations by means of a piezo operating element. Since, in addition to its function as a bending wave loudspeaker, the protective window also has to assume the functions of mechanically protecting the interior of the mobile telephone and has to be transparent, the selection of materials for the protective

window is limited and cannot be optimized, in particular for the function of the protective window as a bending wave loudspeaker.

#### BRIEF SUMMARY

~~Starting from this point, the invention is based on the object of providing~~  
Exemplary embodiments disclosed below disclose improved sound reproduction properties for a mobile telephone of the type mentioned in the introductionbackground.

~~In the abovementioned mobile telephone, this object is achieved by the characterizing features of claim 1, according to which~~Under one such embodiment, one of the exposed sections of the phone is at least partially in the form of a bending wave loudspeaker comprising a plate-like element for emitting audible signals and an operating element for exciting bending waves in the plate-like element.

Improved sound reproduction properties of the mobile telephone are produced firstly by the fact that it is equipped with a bending wave loudspeaker, which to date has not yet been disclosed in the prior art for the slider mobile telephones ~~in question here~~ disclosed herein. In addition, ~~it is of significant importance that an exposed section of the mobile telephone is used to embody the bending wave loudspeaker because this type of section has, in principle, rather~~ loudspeaker. Under such a configuration, the mobile telephone will have relatively low requirements in terms of mechanical protection of the interior of the associated housing part of the mobile telephone. In this respect, the flat section of a housing part which forms the bending wave loudspeaker has considerably more degrees of freedom in terms of material selection compared to the prior art.

~~In principle, the~~The bending wave loudspeaker can be formed by a flat section made of the same material as the material of the housing parts. ~~However,~~  
~~the~~The plate-like element in the exposed section is also preferably optimized for the purpose of excitation with bending vibrations. Irrespective of the material selected, the plate-like element is to be flexibly fixed to the associated housing part so that excitation with bending vibrations is possible. However, both the shape and

material of the mobile telephone can be optimally selected on account of the chosen arrangement of the plate-like element of the bending wave loudspeaker.

A keypad of the mobile telephone can be arranged in ~~that~~ the section of the first housing part which is exposed by the displacement, while the plate-like element of the bending wave loudspeaker can be arranged in the exposed section of the second housing part. Since, in order to have easy access to the keypad, a user holds the mobile telephone in such a way that the keypad is facing him, the exposed section of the second housing part, which comprises the plate-like element of the bending wave loudspeaker, faces away from the user. This has the advantage that sound is also emitted away from the user of the mobile telephone by means of the bending wave loudspeaker, so that when the mobile telephone is used in hands-free mode, in particular during transition from normal sound reproduction to hands-free reproduction, sudden increases in the intensity of sound do not directly affect the user. The risk of damage to the user's hearing on account of a transition of this kind is thus effectively avoided.

A separating wall can be provided between the plate-like element in the region of the exposed section of the second housing part and the interior of this housing part if increased mechanical protection or increased sealing against dust is desired.

The interior of the second housing part is mechanically protected when the separating wall in the interior of the second housing part, ~~that is to say i.e.,~~ inward from the plate-like element, is arranged in such a way that on the one hand the plate-like element can execute the required buckling for the bending vibrations, but on the other hand cannot touch components which are against mechanical stress in the interior of the second housing part.

#### BRIEF DESCRIPTION OF THE DRAWINGS

~~The invention is explained in even greater detail below by way of example with reference to the drawings, in which:~~

The various objects, advantages and novel features of the present disclosure will be more readily apprehended from the following Detailed Description when read in conjunction with the enclosed drawings, in which:

~~figure 1~~ Figure 1 shows a schematic side view of a slider mobile telephone, and

~~figure 2~~ Figure 2 shows a sectional view of a housing part of the slider mobile telephone according to ~~figure 1~~ Figure 1.

#### DETAILED DESCRIPTION

The slider mobile telephone illustrated in ~~figure 1~~ the exemplary embodiment of Figure 1 has a first housing part 1 and a second housing part 2 ~~which wherein each part~~ can be displaced with respect to one another, ~~to be precise~~ in the longitudinal direction of the mobile telephone.

In ~~figure 1~~ Figure 1, the first housing part 1 is displaced with respect to the second housing part 2 in such a way that the first housing part 1 exhibits an exposed section 3, in the region of which a keypad of the mobile telephone is arranged.

The second housing part 2 also has an exposed section 4, in the region of which a bending wave loudspeaker is accommodated which is formed by a plate-like element 5 and a piezo operating element 6 which excites the plate-like element 5 to produce bending vibrations so that the bending wave loudspeaker emits audible signals.

A display window 7, which is situated opposite the bending wave loudspeaker, is provided on an outer face of the second housing part 2.

On account of the provided arrangement of the plate-like element 5 of the bending wave loudspeaker, it emits sound away from a user of the mobile telephone.

It can be seen from the exemplary embodiment shown in figure 2 ~~Figure 2~~ that the interior of the second housing part 2 ~~illustrated here~~ contains a circuit board 8 which is to be protected against mechanical damage. For this reason, a separating wall 9 is arranged between the plate-like element and the circuit board 8, this separating wall being sufficiently mechanically stable and being fixed to an inner wall of the second housing part 2. The arrangement of the separating wall 9 is chosen such that the plate-like element 5 can execute the bending vibrations which are to be performed in order to emit sound over a desired frequency range.

It should be understood that various changes and modifications to the presently preferred embodiments described herein will be apparent to those skilled in the art. Such changes and modifications can be made without departing from the spirit and scope of the present invention and without diminishing its intended advantages. It is therefore intended that such changes and modifications be covered by the appended claims.

## ABSTRACT

The ~~invention-disclosure~~ relates to a mobile telephone equipped with a first ~~(1)~~ and a second housing part ~~(2)~~, which can be displaced in relation to one another in such a way that sections ~~(3, 4)~~ of the housing part ~~(1, 2)~~ are exposed by said displacement. ~~The invention is~~ Exemplary amendments are characterized in that one of the exposed sections ~~(4)~~ is configured at least partially as a bending wave loudspeaker comprising a plate-shaped element ~~(5)~~ for emitting sound signals and an actuating element for exciting bending waves in the plate-shaped element ~~(5)~~.

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of claims:**

Claims 1-6 (canceled).

Claim 7 (new):           A mobile telephone comprising:  
a first and a second housing part, wherein each part can be displaced with respect to one another in such a way that respective sections of each housing part are exposed as a result of the displacement, wherein  
one of the exposed sections is at least partially in the form of a bending wave loudspeaker comprising a plate-like element for emitting audible signals and an operating element for exciting bending waves in the plate-like element.

Claim 8 (new):           The mobile telephone as claimed in claim 7, wherein a material for the plate-like element is optimized for the purpose of excitation with bending vibrations.

Claim 9 (new):           The mobile telephone as claimed in claim 7, further comprising a keypad arranged in the section of the first housing part that is exposed by the displacement, and the plate-like element of the bending wave loudspeaker is arranged in the exposed section of the second housing part.

Claim 10 (new):          The mobile telephone as claimed in claim 7 further comprising a separating wall between the plate-like element in the region of the exposed section of the second housing part and the interior of said housing part.

Claim 11 (new):          The mobile telephone as claimed in claim 10, wherein the separating wall mechanically protects the interior of the second housing part against buckling of the plate-like element.



Claim (12 (new):      The mobile telephone as claimed in claim 7, wherein the exposed section that is associated with the bending wave loudspeaker is arranged on a rear face of the mobile telephone when the first and the second housing part are displaced with respect to one another.